EDUCATIONAL FORESTS IN THE NETHERLANDS

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Abstract
Increasing attention to wood production lead to the necessity for owners of forest and nature areas to promote the knowledge and experiences in silviculture and forest management among their staff and work force. Contacts between the main forest owner (the State Forest Service) and the education institutes led to an agreement concerning the long -term use of indicated forest areas as educational forests. Here the considerations and relevant points in the agreement are discussed.

Key words: educational forests, State Forest Service, Schools, agreements

Introduction

The Netherlands is a densely populated small country with a growing forest cover of less than ten percent. Conflicting aims (recreation, conservation, timber production, CO2 storage) for forest management require high qualities of the graduates of the forestry schools in this country. In 2015 both the forestry schools as well as the main forest owner, the State Forest Service (Staatsbosbeheer), concluded it would improve the quality of the education if this education could be carried out in a forest permanently available for these schools. Based on this, they decided in 2016 to establish three Educational Forests. The first experiences will be discussed here.

Forestry and forestry schools in the Netherlands

The Netherlands is a small country (37.000 km2) with a growing population. The forest cover is low, less than 10 percent and - during the last year and against the general trend of the last years - diminishing (van den Knaap and von Meijenfeldt, 2018). From 1980 till about 2010 nature policy (including forest policy) was aimed nearly completely on conservation of nature and recreation, whereas wood production was neglected. Forestry education neglected during this period more or less the subject timber production in the curricula and forestry personnel lost their knowledge and experience here (Anonymous, 2016a). The largest forest owner is the State Forest Service (Staatsbosbeheer, further SBB, Anonymous, 2016a)
The education of foresters in the Netherlands is mainly concentrated in three schools (see Schilders and Schmidt, 2016[11]). Helicon Opleidingen (Helicon School, further HELICON (see Helicon, s.a.) offers education at the pre-vocational and

[10] Based on interviews with Harrie Hekhuis (SBB), Maarten Marsman (Helicon), Jan den Ouden (WU) and John Raggers (VHL).
[11] VHL offers actually only a four-year Bachelor degree.

vocational level. Van Hall-Larenstein University of Applied Sciences (further VHL, see VHL, s.a.) educates students at the professional level, whereas Wageningen University (further WU, see WU, s.a.) does the same at scientific level. Cross-over possibilities between the curricula of these three schools are available but only minimally used. These schools are about one hundred years old and offer study programmes changing according to the demands of the society. This means that between 1980 and 2015 in the curricula more attention was given to nature conservation and less to silviculture and forest management.

Around 2010 Dutch nature policy changed and forest and nature owners were made more responsible for their own financing, and thus forced to generate more money out of their estates (personal observation[12]). Timber production became important again. Many forest owners - -including SBB as the largest one - sensed the lack of relevant knowledge and experience. In-forest education and in-company education was started again. Schools should - following the demands of society - pay more attention to silviculture and forest utilization. Moreover, SBB and the forest schools realised again the possibilities and the importance of permanent educational forests.

Cooperation agreement educative forests

On February 17th, 2016 four partners signed an agreement on educational forests. These were SBB as the largest forest owner, making some forests available to the schools, and the three schools mentioned above as the users (see Figure 1). This agreement replaced older, not well implemented ones from the 1980s. I am citing below from a copy of this agreement (see Anonymous, 2116b), which is in Dutch and not published scientifically but archived in the administration of one of the schools (WU).

Figure 1: Signature of the partners on the 'Samenwerkingsovereenkomst'. Photo Jan den Ouden.

[12] The author was at that time member of the society council of Vereniging Natuurmonumenten (Society for Nature Conservation) and member of the editorial board of the Professional Journal Nature Forest Landscape. In both institutions this subject was discussed regularly.)

These partners based their agreement on ten considerations, of which I will cite[13] or paraphrase (in Italics) and discuss the for this paper most relevant ones.

- *Forest management is a long-term activity, during which biological, economical and societal values should be connected to each another continually. This requires professional skills and experiences, which both forests owners (for instance SBB) and forestry schools should take into account.* This is the basis for good forest management, which does not need to be discussed here.
- *It should be possible to test the topics to be taught to students in practice. Hence it is important to make the consequences of management interventions perceptible, possible to be traced and tested in the forest ecosystem. Forestry schools need forests to be able to do that.* Theoretical teaching in the classroom needs to be complemented by in-forest education.
- *The developments in the forests due to management interventions can be illustrated by continually testing in the forest with the aid of on the teaching function aimed at registration of data.* This is of course a large challenge for the schools, but research could profit too.

The other seven considerations concern history, non-adequate implementation of earlier agreements and internal intentions of SBB to enhance the quality of its personnel. They are not relevant here. All these considerations together led to this agreement in 2016 in which SBB made available three forest estates mentioned by name to the three schools as educational forests. In this agreement eleven items are described, of which five are relevant here:

- Cooperation
  - Partners cooperate in the field of education and research in forest management. SBB makes forests available for educational and research aims; schools consider in teaching and research the wishes of SBB and share the results with SBB.
  - No financial dues are generated by this agreement. Each partner bears his own costs; they are, however, obligated to issue the money. Translated from the agreement in Dutch: they have an effort obligation.
- Representatives
  - Each school appoints a contact person; SBB appoints two, one for the daily contacts (the local forester) and one for coordination.
- Aims: To the aims of education, research and cooperation belong
  - Educational environment, i.e. a concrete forest or field.
  - Experiments: interventions in these locations are quite suitable for development of new management strategies by implementing and recording them continually and showing them to students and colleagues.
  - State-of-the-art: on these locations it can be demonstrated how a responsible and sustainable forest company functions.

[13] Translated from Dutch.

  - Possibilities for transfer of new knowledge from schools to practice, both to SBB and other forest companies.
- Registration obligations
  - Schools are obligated to record all characteristics of the site and of the interventions. These records should be accessible for both SBB and schools.
- Responsibilities
  - The terrain has to be a normal part of the Dutch forest estate. SBB is responsible for the management, with SBB objectives - aiming at multiple functions - guiding and taking into account the wishes of the schools.
  - SBB is responsible for formulating and implementing annual plans, including interventions in the framework of education. These interventions could be delegated to the schools.
  - The schools are responsible for the education plans, which should not harm the SBB management aims.
  - Both schools and SBB will try to find funds inside their budget.

Implementation and experiences

Three forest estates were allocated as educational forests. All are situated on the Veluwe, the largest forest area in the middle of the Netherlands. The soils are mainly sandy soils. Of course, not all soil and forest types are available on these locations which can be and is compensated by excursions to other parts of the country.

Educative activities (practicals) were already since the 1960ties organised in these forests, partly in the framework of older agreements. These will continue, an overview is given in Table 1. This holds also for the marteloscope plots (see Poore, 2013) already established in two of these forests.

Excursions will continue too but it is not yet clear who will bear the costs of excursions from outside the schools and SBB.

Research plots existed already and continue to be monitored and new ones are established. WU is appointed as the research coordinator. Likely subjects are enclosures, non-paper administration, silvicultural treatments of *Prunus serotina,* an exotic (North American) tree species considered in the Netherlands as aggressive and invading. Some design work for better arrangements between the schools - for instance WU design level, VHL management level, HELICON (manual) execution level - could facilitate research here, perhaps also reduce costs.

In the agreement, monitoring by the schools is emphasized. They have to involve students here, both in practicals and in BSc-, MSc- and PhD-theses. The quality of monitoring by students, which is of course based on the instructions by teachers, is important. One school included in a textbook a drawing of the development of a

Table 1: Educational items* taught by Helicon, VHL and WU in one of the three educational forests

Title	ECTS
Helicon level 3	
Forest inventory and forest management plan	5
Stand evaluation	1
Tree species	1
Soil science	1
Practical forest practices	1
Helicon level 4	
Forest inventory and forest management plan	5
Stand evaluation	1
Tree species	1
Soil science	1
Practical forest practices	1
Forest inventory special	1
Practical final cutting**	PM
VHL-Bachelor	
Management plan for a part of one of the educational forests	7
Practical soil science	1
Practical thinning, forest development, forest ecology and evaluation function realization	1
Practical forest ecology and forest inventory	1
Forest Exploitation: thinning and rejuvenation	2
Practical Marteloscope	1
Elaborate to management issues based on questions from the forest manager	
WU Bachelor	
Field practical Forest and nature conservation I (mainly ecology)	3
Field practical Forest and nature conservation II (mainly ecology)	2
Minor projects in various courses	1
Short excursions	1

*) These educational items are integrated in larger courses. The number of ECTS is estimated.
**) Helicon tries to organize every year a Practical final cutting in one of the educational forests, but that proves impossible because not every year a final cutting is included in the forest management plan.

Douglas fir tree based on student practicals (see Figure 2): quality enough. On the other hand, teachers from another school are reflecting on new instructions to improve monitoring practicals. Here a better practical can be expected. Students, of course, are learning by doing and making mistakes and having them corrected by teachers. But, can management decisions be taken on the basis of students work? This is still an open question.

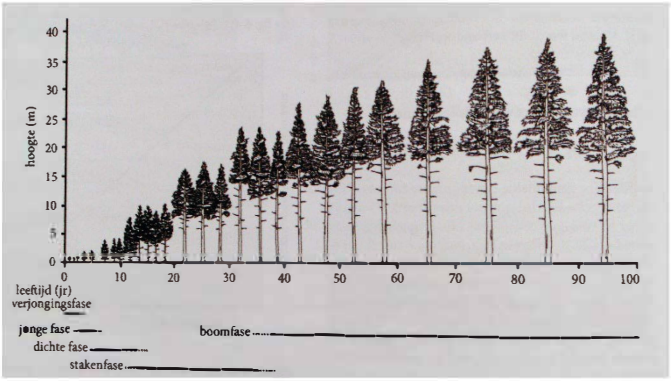

Figure 2: Development of a Douglas fir tree as drawn by students on the basis of their observations in the Speulder- and Sprielderbos. (source: Verheyen *et al.*, 2016).

In the interview, SBB mentioned the establishment of some large (>10 ha) plots, each demonstrating one silvicultural management system. This is not yet implemented but will be very useful in future.

Discussion

In the one and a half year of functioning, quite a lot was established and some starting and perhaps running problems emerged. Schools are not involved in the formulation of aims and management guidelines of the educational forests. How free are they, for instance, in the choice of research subjects and how free are they in the choice of the silvicultural systems et cetera to be established? Do they have to comply always to SBB and work inside their aims and ideas? Independence of the schools in their choice of education and research is a great good.

SBB bears the management costs and gets the revenues, not the schools. This is a defendable choice made by the partners, but if schools were (co)responsible, it may be that they would be forced to make a better effort.

Costs of education and research are funded by the schools out of their normal budget or out of external (research) funds. Sometimes, SBB can help for instance by making posts available out of thinnings to be used for enclosures, which are established by students from HELICON in a practical (see Figure 3). On the other hand, it is clear that all partners have to spend more creativity, energy and attention to the educational forests than is possible with the current manpower (teachers, SBB managers) available. Partners have an effort obligation (see above) and for a successful further implementation should make extra funds available.

SBB appointed more than one contact persons, one as coordinator and three at the forester level, each responsible for one of the forest estates. Of course, the visions of these persons should match. Moreover, the foresters were already working in the forest estates and selected as good foresters; SBB is considering for a next appointment here to look for foresters with an affinity to education and research.

Figure 3: Posts for an enclosure being built by HELICON students during a practical. (Photo M. Marsman).

It is the intention of the partners to establish large plots to demonstrate a number of management and/or silvicultural systems. The best approach here would be to develop a broad long-term vision on forestry in the Netherlands, formulated by the four partners. Perhaps other representatives of forestry and nature management should be invited too. Future forestry practice and future forestry research should be included. Based on this vision management interventions and silvicultural systems can be chosen to be included in these demonstration plots. A special paragraph on cooperation between the schools should be included in the agreement to improve this cooperation on both education and research.

References

Anonymus, 2016a: Groeiende toekomst. De bosvisie van Staatsbosbeheer. (in Dutch: Growing future, Vision of the State Forest Service on its forest management). SBB.

Anonymus, 2016b: Samenwerkingsovereenkomst medegebruik terreinen Staatsbosbeheer voor onderwijs- en onderzoeksdoeleinden. (in Dutch, Cooperation agreement joint use fields of State Forest Service for education- and research purposes). Not published.

Helicon, s.a.: www.helicon.nl

Poore, A., 2013: The marteloscope, a trainings aid for improving marking skills in continuous cover silviculture. Selectfor Ltd, UK (www.selectfor.com/courses/downloads/marteloscope training aid. Pdf)

Schilders, H, and Schmidt, P., 2016: Education system for forest and nature management in the Netherlands. Pp 65-76 in Schmidt, P., Hasenauer, H. and

Lewark, S.: Should all forestry students learn the same? Generalist versus specialist approaches. SILVA Network Publications 13

van der Knaap, P. and von Meijenfeldt, C., 2018: Stijgende houtvraag noodzaakt tot integrale aanpak. (in Dutch, Increasing wood demand needs an integral approach). Vakblad Natuur Bos Landschap, 141, 4-6

Verheyen, K., den Ouden, J., Muys, B. and Aerts, R., 2016: Populatiedynamiek. Pp. 103-121 in den Ouden, J., Muys, B., Mohren. F.M. and Verheyen, K.: Bosecologie en bosbeheer. Leuven.

VHL, s.a.: www.hvhl.nl

WU, s.a.: www.wur.nl

All websites addressed June 2018